

II. The Claims Satisfy the Requirements of 35 U.S.C. §112, First Paragraph

The Office Action rejects claim 17 under 35 U.S.C. §112, first paragraph based on non-enablement. Specifically, the Office Action asserts that the specification does not provide support for the substrate having a thinner portion at the corner portion, as recited in claim 17. This rejection is respectfully traversed.

The specification discusses forming a substrate with a thinner portion at a corner portion of the substrate at least at page 25, line 12-page 27, line 9. Specifically, according to one exemplary embodiment of the invention, depressions are formed in the substrate that are cut to form thinner portions in the substrate.

The features of claim 17 are clearly supported by the specification. Withdrawal of the rejection under 35 U.S.C. §112, first paragraph is respectfully requested.

III. The Claims Define Patentable Subject Matter

The Office Action rejects claims 15-21 under 35 U.S.C. §103(a) over Newman (U.S. Patent No. 5,455,456) or Freyman et al. (U.S. Patent No. 6,124,637) in view of Nakamura (U.S. Patent No. 5,729,051) or Distefano (U.S. Patent No. 5,776,796). This rejection is respectfully traversed.

A. Newman

Newman, whether alone or in combination with Nakamura or Distefano, does not disclose or suggest a semiconductor device in which, *inter alia*, the substrate is indented at a corner portion further inward than a portion of the resin, as recited in claim 15.

Instead, Newman discloses an integrated circuit (IC) package 100 having a substrate 106, 202 and a lid 110 that covers a portion of the top surface of the substrate 106. The lid 110 covers an encapsulant 302, and both the lid 110 and encapsulant 302 do not extend to the periphery 102 of the substrate 106. See column 4, lines 44-60 of Newman. Thus, the substrate of Newman could not possibly have a corner portion that is indented further inward than a portion of the resin.

The Office Action attempts to make up for the deficiencies of Newman by combining Newman with either Nakamura or Distefano. However, Nakamura or Distefano also do not disclose the substrate indented at a corner portion further inward than a portion of the resin.

Fig. 5 of Nakamura discloses a semiconductor device including a sealing resin 4 covering four corners 12 of a substrate 2. However, the substrate of Nakamura does not have a portion that is indented inward.

Fig. 1 of Distefano merely discloses a semiconductor package including an encapsulation material 40 that covers a dielectric layer 16. The dielectric layer of Distefano also does not have a part that is indented inward at a corner portion of the substrate.

B. Freyman et al.

Freyman et al., whether alone or in combination with Nakamura or Distefano, does not disclose or suggest a semiconductor device in which, *inter alia*, a part of the substrate is indented further inward than an edge surface of a resin at a corner portion of the substrate, as recited in claim 15.

Instead, Freyman et al. discloses a packaged assembly 700 including a substrate 22 and a package body 61. The package body 61 does not extend beyond the periphery of the substrate 22. Thus, the substrate of Freyman et al. could not possibly have a corner portion that is indented further inward than a portion of the resin.

The Office Action attempts to make up for the deficiencies of Freyman et al. by combining Freyman et al. with Distefano or Nakamura. However, as discussed above, Distefano or Nakamura also do not disclose the substrate being indented at a corner portion further inward than a portion of the resin.

Neither Newman nor Freyman disclose or suggest the semiconductor device of claim 15. Neither Distefano nor Nakamura make up for the deficiencies of Newman and Freyman. Thus, combining Newman or Freyman with Distefano or Nakamura does not result in the semiconductor device of claim 15.

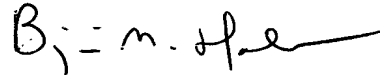
For at least these reasons, it is respectfully submitted that claim 15 is patentable over the applied references. The dependent claims are likewise patentable over the applied references for at least the reasons discussed as well as for the additional features they recite. Applicant respectfully requests that the rejection under 35 U.S.C. §103 be withdrawn.

IV. Conclusion

In view of the foregoing, Applicant respectfully submits that this application is in condition for allowance. Favorable consideration and prompt allowance are earnestly solicited.

Should the Examiner believe anything further is desirable to place this application in even better condition for allowance, the Examiner is invited to contact Applicant's undersigned representative at the telephone number listed below.

Respectfully submitted,



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Attachments:
Appendix
Petition for Extension of Time

Date: March 1, 2002

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DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461
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APPENDIX

Changes to Claims:

Claims 1-14 and 22-28 are canceled.

The following is a marked-up version of the amended claims:

15. (Amended) A semiconductor device comprising:

a semiconductor chip;

a substrate on which the semiconductor chip is mounted and which is formed by cutting apart a larger substrate; and

resin for sealing the semiconductor chip;

wherein the semiconductor device has side surfaces, each of the side surfaces are flat, each of the side surfaces are made of at least an edge surface of the substrate and an edge surface of the resin, the edge surfaces of the substrate and the resin are level with each other, a pair of the side surfaces make a corner portion,~~an outer shape having a corner portion;~~ and

~~wherein a part of the substrate is indented at the corner portion further inward than an edge surface of a portion of the resin at the corner portion.~~

16. (Amended) The semiconductor device as defined in claim 15,

wherein the substrate at the corner portion forms a shape that is indented in the opposite direction from the direction in which the corner portion protrudes, and thus an edge-indented surface of the substrate is indented-positioned further inward than the edge-surface-portion of the resin.

17. (Amended) The semiconductor device as defined in claim 15,
wherein the substrate has ~~the formation of a thinner portion in the substrate at~~
the corner portion, ~~ensures that~~ and a surface of the thinner portion of the substrate is
indented further inward than the ~~edge surface portion~~ of the resin.

18. (Amended) The semiconductor device as defined in claim 15,
wherein ~~the part~~ an indented surface of the substrate ~~that is indented further~~
~~inward than the edge surface of the resin at the corner portion~~ is covered by the resin.

19. (Amended) The semiconductor device as defined in claim 15,
wherein a cover is provided at the corner portion, between the substrate and
the resin; and

wherein ~~the part~~ an indented surface of the substrate ~~that is indented further~~
~~inward than the edge surface of the resin~~ is exposed.